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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/433,239	11/04/1999	RICHARD HAROLD BOIVIE	YO999-459	2282

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EXAMINER

LI, SHI K

ART UNIT PAPER NUMBER

2633

DATE MAILED: 06/21/2002

#6

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/433,239

Applicant(s)

BOIVIE, RICHARD HAROLD

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 20-22 and 27-37 is/are rejected.
- 7) ☒ Claim(s) 14-19 and 23-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. FIG. 5B is objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the controller of claim 1 and subsequent claims must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1, 8-10, 20 and 29-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (U.S. Patent 6,111,673).

Regarding claims 1 and 31, Chang et al. discloses a switching system in FIG. 4 comprising a switching device 430, a tag switch controller 410 with look-up table (route table). The system exchanges routing information with other nodes via the Network Control & Management (MC&M) 220 and headers that are carried along with data.

Regarding claims 8-10, Chang et al. teaches routing algorithm in col. 16, line 61-col. 17, line 14. A shortest path algorithm, such as Dijkstra's, generates a minimum spanning tree with the destination as the root. As illustrated in FIG. 1, traffic for an end user is routed to an egress (edge router) such as node 121 and then distributed by the IP router and ATM switch.

Regarding claim 20, Chang et al. discusses the optical technology in col. 19, lines 8-55. The data path of the switching system is all-optical.

Regarding claims 29 and 32-35, Chang et al. discloses a WAN that the switching system is applicable.

Regarding claim 30, the protocol of the switching system of Chang et al. is tag switching as indicated by the title and explained in the disclosure.

Claims 36-37 are rejected based on the same reason as claims 34-35. The preamble of these claims are not accorded any patentable weight because they merely recite the purpose of a process or the intended use of a structure, and where the body of these claims do not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (U.S. Patent 6,111,673) in view of Garnot et al. (M. Garnot et al., "Planning of WDM Networks: Methods, Routing Node Modeling and Applications", IEEE, 1998).

Chang et al. has been discussed above with regard to claims 1, 8-10, 20 and 29-37, regarding claim 2, the difference between Chang et al. and the claimed invention is that Chang et al. encodes the label into the optical signal while the claim invention uses the wavelength as the label. Garnot et al. teaches the art of wavelength routing in which an optical path is defined by a concatenation of wavelengths (p. 353, left col. last paragraph). In the case of wavelength routing (WR), the wavelength is the same throughout the path. That is, a wavelength is associated with a destination and can be used as the tag in the system of Chang et al. Doing so simplifies the switching system by eliminating the need to add and retrieve tags. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use wavelengths as tags and associated wavelengths with destinations, as taught by Garnot et al., in the switching system of Chang et al. because it simplifies the design.

Regarding claim 11, the difference between Chang et al. and the claimed invention is that Chang et al. uses wavelength conversion at the merge point while the claimed invention uses multiple wavelengths. Garnot et al. illustrates the uses of multiple wavelengths for the same

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destination in FIG. 6. By assigning multiple wavelengths to a destination avoids blocking without wavelength conversion. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign multiple wavelengths to a destination, as taught by Garnot et al., in the switching system of Chang et al. to avoid blocking without using wavelength conversion.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Garnot et al. as applied to claim 2 above, and further in view of Solgaard et al. (U.S. Patent 6,097,859).

Chang et al. and Garnot et al. have been discussed above in regard to claim 2. The difference between the modified switching system of Chang et al. and Garnot et al. and the claimed invention is that Chang et al. and Garnot et al. do not specify the technology and mechanism of the switching device. Solgaard et al. discloses a cross-connect switch using mirrors for reflecting light beams. Large size switches can be built using this technology. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use MEMS for the switching device, as taught by Solgaard et al., in the modified switching system of Chang et al. and Garnot et al. because MEMS technology is capable of building large cross-connects.

9. Claims 5 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (U.S. Patent 6,111,673) in view of Domash (U.S. Patent 5,937,115).

Chang et al. has been discussed in regard to claim 1. The difference between Chang et al. and the claimed invention is that Chang et al. does not specify the technology and mechanism of the switching device. Domash discloses a light steering optical switch using holographically

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polymerized polymer/liquid crystal composites. Such a switch does not have moving parts and therefore highly reliable. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use light steering optical switch, as taught by Domash, in the switching system of Chang et al. because it is reliable.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Garnot et al. as applied to claim 2 above, and further in view of Xu et al. (S. Xu et al., "Dynamic Routing and Assignment of Wavelength Algorithms in Multi-Fiber Wavelength Division Multiplexing Networks", Proceedings of Eight International Conference on Computer Communications and Networks, October 1999).

Chang et al. and Garnot et al. have been discussed above in regard to claim 2. The difference between the modified switching system of Chang et al. and Garnot et al. and the claimed invention is that Chang et al. and Garnot et al. may use different wavelengths over a lightpath. Xu et al. teaches the use of multiple fibers to obtain the same result as partial wavelength conversion. Installing bundles of fibers also serve the purposes of fault tolerance and future network growth as cited by Xu et al. in p.332, right col., last paragraph. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple fibers between node pairs and maintain the same wavelength throughout a lightpath, as taught by Xu et al., in the modified switching system of Chang et al. and Garnot et al. to eliminate wavelength converters.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al., Garnot et al. and Solgaard et al. as applied to claims 3 and 4 above, and further in view of Xu et al. (S. Xu et al., "Dynamic Routing and Assignment of Wavelength Algorithms in Multi-Fiber

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Wavelength Division Multiplexing Networks”, Proceedings of Eight International Conference on Computer Communications and Networks, October 1999).

Chang et al., Garnot et al. and Solgaard et al. have been discussed above in regard to claims 3 and 4. The difference between the modified switching system of Chang et al., Garnot et al. and Solgaard et al. and the claimed invention is that Chang et al., Garnot et al. and Solgaard et al. may use different wavelengths over a lightpath. Xu et al. teaches the use of multiple fibers to obtain the same result as partial wavelength conversion. Installing bundles of fibers also serve the purposes of fault tolerance and future network growth as cited by Xu et al. in p.332, right col., last paragraph. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple fibers between node pairs and maintain the same wavelength throughout a lightpath, as taught by Xu et al., in the modified switching system of Chang et al., Garnot et al. and Solgaard et al. to eliminate wavelength converters.

12. Claims 12-13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (U.S. Patent 6,111,673) in view of Xu et al. (S. Xu et al., “Dynamic Routing and Assignment of Wavelength Algorithms in Multi-Fiber Wavelength Division Multiplexing Networks”, Proceedings of Eight International Conference on Computer Communications and Networks, October 1999).

Chang et al. has been discussed above in regard to claims 1, 8-10, 20 and 29-37. Regarding claim 12, the difference between Chang et al. and the claimed invention is that Chang et al. does not use multiple fibers between pair of nodes. Xu et al. teaches the use of multiple fibers. Use of multiple fibers avoids wavelength collision. Installing bundles of fibers also serve the purposes of fault tolerance and future network growth as cited by Xu et al. in p.332, right

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col., last paragraph. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple fibers between node pairs and maintain the same wavelength throughout a lightpath, as taught by Xu et al., in the switching system of Chang et al. to avoid wavelength collision.

Regarding claims 13 and 21, Xu et al. illustrates multiple optical ports, each of which has multiple fibers, in FIG. 1.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. and Xu et al. as applied to claim 13 above, and further in view of Domash (U.S. Patent 5,937,115).

Chang et al. and Xu et al. have been discussed above in regard to claim 13. The difference between the modified switching system of Chang et al. and Xu et al. and the claimed invention is that Chang et al. and Xu et al. do not specify the technology and mechanism of the switching device. Domash discloses a light steering optical switch using holographically polymerized polymer/liquid crystal composites. Such a switch does not have moving parts and therefore highly reliable. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use light steering optical switch, as taught by Domash, in the modified switching system of Chang et al. and Xu et al. because it is reliable.

Allowable Subject Matter

14. Claims 14-19, 23-26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

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15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

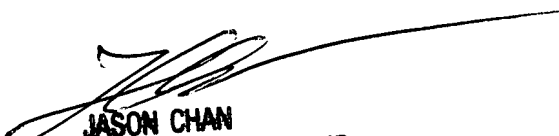
a. Brackett et al. discloses a WDM switching system with single fiber between each node pair.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

skl
June 17, 2002


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